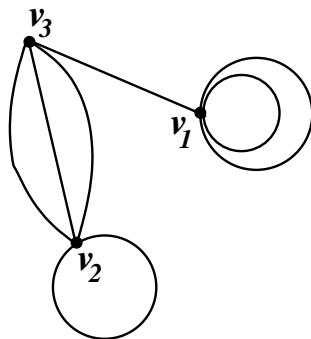


Math 213, Quiz 9 (Solutions); Friday, April 11, 2008

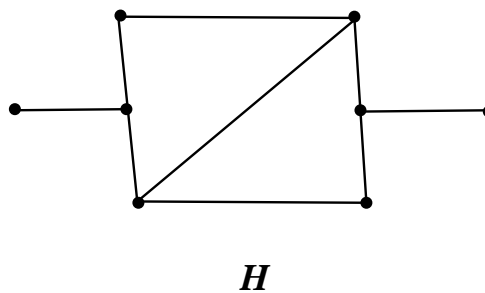
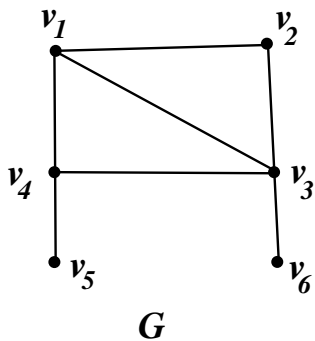
1. Draw a graph whose adjacency matrix is $A_G = \begin{bmatrix} 2 & 0 & 1 \\ 0 & 1 & 3 \\ 1 & 3 & 0 \end{bmatrix}$.

Solution.



2.

- (a) Determine if the graphs G and H are isomorphic. Justify your answer.



- (b) Order the vertices of G and write the adjacency matrix for G corresponding to that ordering.

Solution.

- (a) The graphs G and H are not isomorphic since G has a vertex of degree 4 but H has no vertices of degree 4. (Alternatively, we see that G has 6 vertices while H has 8 vertices, which also implies that these graphs are not isomorphic).

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(b) With the ordering $v_1, v_2, v_3, v_4, v_5, v_6$ of the vertex set of G , as indicated in the above picture, we have

$$A_G = \begin{bmatrix} 0 & 1 & 1 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{bmatrix}.$$